



3D TEE and Systolic Anterior Motion in Hypertrophic Cardiomyopathy

Real-time 3-dimensional echocardiography allows for better visualization and understanding of morphology-to-function correlation among 3-dimensional cardiac phenomena than was possible with 2-dimensional echocardiography in the past ([Online Videos 1 and 2](#)) (1) ([Fig. 1](#)). One such phenomenon is the systolic anterior motion of the anterior mitral valve leaflet, which is seen in 31% to 61% of patients with hypertrophic cardiomyopathy and its consequence, a dynamic left ventricular outflow tract (LVOT) obstruction (2). Presumably, real-time 3-dimensional echocardiography can better show the anatomical findings including the large, anteriorly placed mitral valve leaflets, short chordae tendinae, narrow LVOT, an anterior position of the papillary muscles and more importantly, allow for evaluating LVOT obstruction better than the current 2-dimensional echocardiography. We show that real-time 3-dimensional transesophageal echocardiography can very clearly demonstrate obstruction of the LVOT caused by the anterior mitral valve leaflet in hypertrophic cardiomyopa-

thy as well as show the changes in anterior mitral valve leaflet–LVOT geometry associated with changes in afterload in these patients.

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APPENDIX

For supplementary videos and their legends, please see the online version of this article.



Figure 1. En-face Views of Aortic Valve Showing Unobstructed LVOT Without (A) and With (B) SAM; LVOT Obstruction Due to SAM is Seen Through Aortic Valve Opening (B)

A (en-face, short-axis view) shows a normal left ventricular outflow tract (LVOT) visible during systole through the opening of the aortic valve with systolic blood pressure >120 mm Hg. On the right (B) is the same patient with systolic blood pressure <100 mm Hg where the aortic valve opening is visible, but the left ventricular outflow tract is completely obstructed with the anterior mitral leaflet touching the interventricular septum. A clear visualization of a normally moving anterior mitral leaflet is seen in [Online Video 1](#) and systolic anterior motion (SAM) is visible in [Online Video 2](#) with the anterior mitral leaflet coming in contact with the interventricular septum.